

selecting a length of the arm and a height of the axis of rotation of the arm based on the selected region so that a range of rotational motion of the arm in accessing the selected region can be covered by a range in which the fore-and-aft distance to the tip of the arm can be linearly approximated, wherein the height of the axis of rotation is measured from the reference plane.

2. (Amended) A method for designing an arm structure for a robot according to claim 1, wherein a height of the axis of rotation of the arm is 910 mm, and the arm is adapted to swing vertically at least by 240 mm at its free end both upward and downward from a horizontal line.

X1 3. (Amended) A method for designing an arm structure for a robot according to claim 8, wherein a maximum tolerated error of the fore-and-aft distance of the free end of the arm is 15 mm, and the arm is at least 528 mm long, and swings at least ± 27 degrees from a horizontal line.

4. (Amended) A method for designing an arm structure for a robot according to claim 8, wherein a maximum tolerated error of the fore-and-aft distance of the free end of the arm is 20 mm, and the arm is at least 422 mm long, and swings at least ± 35 degrees from a horizontal line.

5. (Amended) A method for designing an arm structure for a robot according to claim 8, wherein a maximum tolerated error of the fore-and-aft distance of the free end of the arm is 25 mm, and the arm is at least 365 mm long, and swings at least ± 42 degrees from a horizontal line.

6. (Amended) An arm structure for a robot comprising:
an arm which can rotate vertically and forward over a prescribed angle around an axial line extending substantially between two shoulders, wherein:

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a height of the axis of rotation of the arm is 910 mm, and the arm swings vertically at least by 240 mm at its free end both upward and downward from a horizontal line.

7. (Amended) An arm structure for a robot according to claim 6, wherein the arm is at least 365 mm long, and swings at least ± 42 degrees from a horizontal line.

A marked-up copy of the amended claims is attached as required under 37 C.F.R. § 1.121.

Please add the following new claim:

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8. (New) The method of claim 1, further comprising: calculating the maximum error in the fore-and-aft distance caused by the linear approximation.

REMARKS

The above amendments and the following remarks are fully and completely responsive to the Office Action dated December 19, 2002. Claims 1-8 are pending in this application with claim 8 added by the present amendment. In the outstanding Office Action, claims 1-7 were rejected under 35 U.S.C. § 112, second paragraph, and claim 1 was rejected under 35 U.S.C. § 102(b). No new matter has been added. Claims 1-8 are presented for reconsideration.